

Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.(currently amended) A method for inspecting a photolithographically processed wafer, comprising the steps of:

 determining a first image signature of a golden wafer using a first lamp at a first intensity;

 determining a second image signature of the processed wafer using a second lamp at a second intensity;

 adjusting the first image signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature
wherein the difference is substantially equal to a respective value of a single color of the second image signature subtracted from a respective value of said single color of the first image signature;

determining a respective multiple color signature of the golden wafer at each of a plurality of different setting values using the first lamp;

calculating a color slope corresponding to a change in the respective color values for said single color and a plurality of other colors of said multiple color signature as compared to a change in the setting values;

normalizing the slopes of each of said other colors with respect to said slope of said single color to generate an adjustment factor for each of said other colors; and

generating a defect confidence value by comparing the second image signature with the golden wafer signature as adjusted by said adjustment factors.

2. (Original) The method according to claim 1, wherein the first image signature and the second image signature are each a RGB signature.

3. (Original) The method according to claim 2, wherein each of the first image signature and the second image signature has a respective red value, green value, and blue value.

Application No. 10/749,887
Amendment dated September 19, 2007
Reply to Office Action of June 19, 2007

4. (Original) The method according to claim 3, wherein the difference is substantially equal to the respective green value of the second image signature subtracted from the respective green value of the first image signature.
5. (Original) The method according to claim 4, further comprising the steps of:
 - determining a respective RGB signature of the golden wafer at each of a plurality of different setting values using the first lamp;
 - calculating a red slope corresponding to a change in the respective red values as compared to a change in the setting values;
 - calculating a green slope corresponding to a change in the respective green values as compared to a change in the setting values; and
 - calculating a blue slope corresponding to a change in the respective blue values as compared to a change in the setting values.

6.(currently amended) ~~The method according to claim 5, further comprising the steps of:~~

A method for inspecting a photolithographically processed wafer, comprising the steps of:

determining a first image signature of a golden wafer using a first lamp at a first intensity;

determining a second image signature of the processed wafer using a second lamp at a second intensity;

adjusting the first image signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature; and

generating a defect confidence value by comparing the second image signature with the adjusted golden wafer signature;

the first image signature and the second image signature each being a RGB signature;

each of the first image signature and the second image signature having a respective red value, green value, and blue value;

the difference being substantially equal to the respective green value of the second image signature subtracted from the respective green value of the first image signature;

determining a respective RGB signature of the golden wafer at each of a plurality of different setting values using the first lamp;

calculating a red slope corresponding to a change in the respective red values as compared to a change in the setting values;

calculating a green slope corresponding to a change in the respective green values as compared to a change in the setting values;

calculating a blue slope corresponding to a change in the respective blue values as compared to a change in the setting values;

normalizing the red slope with respect to the green slope to generate a red adjustment factor; and

Application No. 10/749,887
Amendment dated September 19, 2007
Reply to Office Action of June 19, 2007

normalizing the blue slope with respect to the green slope to generate a blue adjustment factor.

7. (Original) The method according to claim 6, wherein the step of adjusting further includes the steps of:

adjusting the respective red value of the first image signature based on the difference and the red adjustment factor; and

adjusting the respective blue value of the first image signature based on the difference and the blue adjustment factor.

8. (Original) The method according to claim 1, further comprising the step of:

selecting the second intensity based on an inspection recipe.

9. (Original) The method according to claim 8, wherein the inspection recipe identifies the first intensity.

Application No. 10/749,887
Amendment dated September 19, 2007
Reply to Office Action of June 19, 2007

10. (currently amended) ~~The method according to claim 9, further comprising the step of:~~

A method for inspecting a photolithographically processed wafer, comprising the steps of:

determining a first image signature of a golden wafer using a first lamp at a first intensity;

determining a second image signature of the processed wafer using a second lamp at a second intensity;

adjusting the first image signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature;

generating a defect confidence value by comparing the second image signature with the adjusted golden wafer signature;

selecting the second intensity based on an inspection recipe wherein the inspection recipe identifies the first intensity; and

selecting one of a plurality of different intensity settings for the second lamp that is closest to the first intensity.

Claim 11 (canceled).

12. (currently amended) ~~The method according to claim 11, wherein the step of adjusting includes the steps of:~~

A method for inspecting a photolithographically processed wafer after a develop step, comprising the steps of:

determining a first RGB signature of a golden wafer using a first lamp at a first intensity;

determining a second RGB signature of the processed wafer using a second lamp at a second intensity;

adjusting the first RGB signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature; and

generating a defect confidence value by comparing the second RGB signature with the adjusted golden wafer signature;

the adjusting step including:

calculating a rate of change in the first RGB signature due to a unit change of lamp intensity; and

calculating an amount to adjust the first RGB signature based on the calculated rate of change and the difference between the first intensity and the second intensity.

13.(currently amended) The method according to claim [[11]] 12, wherein each RGB signature has a respective red value, green value, and blue value.

14. (Original) The method according to claim 13, wherein the difference is substantially equal to the respective green value of the second RGB signature subtracted from the respective green value of the first RGB signature.

15. (Original) The method according to claim 14, further comprising the steps of:

determining a respective RGB signature of the golden wafer at each of a plurality of different setting values using the first lamp;

calculating a red slope corresponding to a change in the respective red values as compared to a change in the setting values;

calculating a green slope corresponding to a change in the respective green values as compared to a change in the setting values; and

calculating a blue slope corresponding to a change in the respective blue values as compared to a change in the setting values.

16. (Original) The method according to claim 15, further comprising the steps of:
normalizing the red slope with respect to the green slope to generate a red
adjustment factor; and
normalizing the blue slope with respect to the green slope to generate a blue
adjustment factor.

17.(currently amended) ~~The method according to claim 16, wherein the step of
adjusting further includes the steps of:~~

A method for inspecting a photolithographically processed wafer after a develop
step, comprising the steps of:

determining a first RGB signature of a golden wafer using a first lamp at a first
intensity;

determining a second RGB signature of the processed wafer using a second
lamp at a second intensity;

adjusting the first RGB signature based on a difference between the first intensity
and the second intensity to generate an adjusted golden wafer signature; and

generating a defect confidence value by comparing the second RGB signature
with the adjusted golden wafer signature;

each RGB signature having a respective red value, green value, and blue value;
the difference being substantially equal to the respective green value of the
second RGB signature subtracted from the respective green value of the first RGB
signature;

determining a respective RGB signature of the golden wafer at each of a plurality
of different setting values using the first lamp;

calculating a red slope corresponding to a change in the respective red values as
compared to a change in the setting values;

calculating a green slope corresponding to a change in the respective green
values as compared to a change in the setting values;

calculating a blue slope corresponding to a change in the respective blue values
as compared to a change in the setting values;

Application No. 10/749,887
Amendment dated September 19, 2007
Reply to Office Action of June 19, 2007

normalizing the red slope with respect to the green slope to generate a red adjustment factor; and

normalizing the blue slope with respect to the green slope to generate a blue adjustment factor;

the step of adjusting further including:

adjusting the respective red value of the first RGB signature based on the difference and the red adjustment factor; and

adjusting the respective blue value of the first RGB signature based on the difference and the blue adjustment factor.

18. (Original) The method according to claim 11, further comprising the step of:
selecting the second intensity based on an inspection recipe.

19. (Original) The method according to claim 18, wherein the inspection recipe identifies the first intensity.

Application No. 10/749,887
Amendment dated September 19, 2007
Reply to Office Action of June 19, 2007

20. (currently amended) The method according to claim 19, further comprising the step of:

A method for inspecting a photolithographically processed wafer after a develop step, comprising the steps of:

determining a first RGB signature of a golden wafer using a first lamp at a first intensity;

determining a second RGB signature of the processed wafer using a second lamp at a second intensity;

adjusting the first RGB signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature; and

generating a defect confidence value by comparing the second RGB signature with the adjusted golden wafer signature;

selecting the second intensity based on an inspection recipe, wherein the inspection recipe identifies the first intensity; and

selecting one of a plurality of different intensity settings for the second lamp that is closest to the first intensity.

Claims 21-41 (canceled).